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235500-12-L

R & D STATUS REPORT

DARPA ORDER NO.: 7589 PROGRAM CODE NO.: AA 9700400.1304

CONTRACTOR: Environmental Research Institute of Michigan

CONTRACT NO.: N00014-90-C-0259

EFFECTIVE DATE OF CONTRACT: 01 OCT 1990

EXPIRATION DATE OF CONTRACT: 30 SEPT 1992

PRINCIPAL INVESTIGATOR: Fred J. Tanis

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SHORT TITLE OF WORK: ARCTIC OPTICAL

REPORTING PERIOD: 01/OCT/91 - 31/DEC/91

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DISTRIBUTION STATEMENT

Approved for public release  
Distribution Unlimited

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**DESCRIPTION OF PROGRESS:**

**Program Task I: Assemble Existing Data**

**Study Region: 60N-90N Latitude; 50W-40E Longitude**

**Item 1: Assemble oceanographic data.** All work on this task is virtually complete. Data from 100,000 hydrographic ship stations have been modeled to produce detailed structure of salinity and temperature. These data have been used to define the three dimensional boundaries of six major water types and these have inturn been used to define optical properties.

**Item 2: Assemble snow/ice data.** All work on this task is complete for the study region. Blended models for sea ice thickness have been developed for the region using ice core data and thickness maps produced from submarine sonar data.

The SMMR passive microwave radiometer data (Nimbus 7) have been recently recalibrated by NASA GSFC. Monthly means have been acquired for 1979 through 1984 and processed for sea ice concentration, ice type, and wind velocity.

**Item 3: Assemble cloud data.** The ISCCP (International Satellite Cloud Climatology Project) C2 data have been processes for 1984 through 1987 to compile monthly statistics on a 250 km x 250 km grid. These data have also been resampled on a monthly basis for 25 cloud parameters on a 25 km x 25 km grid over the entire study region.

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**Study Task II: Model Development.**

Item 6: Develop a regional integrated optical model. An integrated model optical model is complete.

Items 7 and 8: Develop a regional multilayered descriptive model. The cloud/ice/ocean data are being assembled into an environmental database. The database spatial and temporal data has been interfaced to simulation performance models. This interface allows selection and review of specific datasets and extraction along user specified transects. An initial set of performance calculations have been made and delivered to the sponsor's technical representative. These results will also be detailed in the second interim technical report.

CHANGE IN KEY PERSONNEL: None

**SUMMARY OF SUBSTANTIVE INFORMATION DERIVED FROM SPECIAL EVENTS:**

A visit was made to the ONR Boston On October 7, 1991 to brief the sponsor's technical project officer.

**PROBLEMS ENCOUNTERED AND/OR ANTICIPATED:** None.

**ACTION REQUIRED BY THE GOVERNMENT:** None.

**FISCAL STATUS:**

(1) \$348,196

(2) \$339,671

Fred J. Tanis  
Program Manager

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